

Lecture MWF 11:00-11:50 in TNR 120

Instructors:

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I. Course Aims:

Students in this course will be introduced to fundamental principles of soil and water resources. Of primary interest will be describing how water moves through the landscape, how aquatic ecosystems function, and how human activities impact water quality and its distribution. Students will also gain an understanding of how soils are formed, and how soil properties affect its function. Importantly, students will gain a deeper appreciation of the critical roles soil and water resources play in sustaining plant and animal life on our planet.

Specific Learning Objectives

By the end of this course, students will be able to:

- Describe how the hydrologic cycle controls water movement in watersheds
- Explain how groundwater and surface water bodies function in the landscape
- Evaluate water quality using basic chemical data
- Discuss how soils are formed
- Determine soil texture and interpret textural effects on soil functional characteristics
- Illustrate the connections between soil physical attributes, chemical properties, and nutrient availability

II. Course Format:

This course contains both lecture and lab components. Lectures will introduce conceptual and applied topics pertinent to the study of soil and water resources. The lab session will provide experience with techniques used to measure water movement, water quality, and soil physical and chemical properties, among other knowledge and skills.

Attendance policy

If you cannot attend a scheduled class session or will be excessively tardy (>10 minutes late), you must have an excused absence to be eligible for any points awarded during the missed class. Excused absences will be considered by Dr. Keymer on a case-by-case basis. It is your responsibility to contact Dr. Keymer at least one week prior to an absence if you have a scheduled conflict that cannot be moved. Illness related absences must be excused by a doctor's note. For other unforeseen circumstances resulting in a missed class, Dr. Keymer must be contacted within 36 hours to arrange for any make-up activity. For both excused and unexcused absences, the student is responsible for reviewing all covered material and announcements with Dr. Keymer or his/her classmates.

Expectations

My expectations for you are that you will respect others, take responsibility for your own learning, participate and ask questions, and maintain a safe working environment. All communication with instructors or classmates must be respectful in content and tone. The classroom must be an environment where everyone feels comfortable and able to learn. Accordingly, students are required to treat others with respect and any behavior that impedes the ability of other students to learn will not be tolerated. Such disrespectful behavior includes, but is not limited to talking out of turn and using electronic devices for non-class related activity. Students are expected to come prepared to class, arriving on time, having read through assigned materials, and ready to participate.

As your instructor, you can expect Dr. Keymer to do everything in his power to be fair, to be available and willing to help you, to provide feedback on work in a timely manner, to relate material to contemporary issues, and to ask you think.

In addition to the specific expectations outlined above, all participants in the course are expected to act in accordance with the UWSP rules for academic conduct. For more information, see the following link: <https://www.uwsp.edu/dos/Pages/Student-Conduct.aspx>.

Regrade requests

Unless otherwise instructed, requests for regrading any assignment or exam must be submitted to Dr. Keymer *in writing* within one week of the graded item being returned.

III. Course Requirements

Required textbooks

Elements of the Nature and Property of Soils, 3rd Edition by N. C. Brady and R. R. Weil (2010) Prentice Hall, New Jersey.

Introduction to Water Resources and Environmental Issues by K. L. Pennington and T. V. Cech (2010) Cambridge University Press, New York.

Supplemental materials

Additional course materials will be made available through Canvas. Lecture slides will usually be posted the day before. Announcements may also be disseminated via Canvas, in lecture, or by email.

Exams

Four exams will be given in lecture covering new material. These exams will not be cumulative, but may relate to topics covered earlier in the semester. The last exam will be given during the final exam period. No make-up exams will be given without a documented excusable absence.

Lab assignments

Eight lab assignments assessing your comprehension of related topics will be assigned by your lab instructor. Ask your lab instructor for details on expectations for those assignments.

Lab quizzes

Lab quizzes will be conducted during the lab period, cover material introduced in your lab section, and be graded by your lab instructor.

Grading scale

Letter grade assignments will be made according to the following scale:

A	= 93 – 100%	C+	= 77 – 79%
A-	= 90 – 92%	C	= 73 – 76%
B+	= 87 – 89%	C-	= 70 – 72%
B	= 83 – 86%	D	= 60 – 69%
B-	= 80 – 82%	F	= below 60%

Point distribution

Student grades will be determined based on the following breakdown of points:

Exams (4)	50%
Lab assignments (8)	33%
Lab quizzes (2)	17%
Total	100%

Dr. Keymer may also offer extra credit opportunities at his discretion.

IV. Academic Integrity

All students have agreed to the UWSP Code of Conduct and are expected to know and abide by the rules documented therein. The policy can be found through the Dean of Students Office (<https://www.uwsp.edu/dos/Documents/UWS%2014-1.pdf>). This includes knowing the difference between plagiarism and paraphrasing, whether summarizing someone else's work in writing or on presentation slides. Individual student work submitted for credit will be your own and not submitted for credit in another course.

Working in groups is encouraged and required for parts of this course. This does not include exams and any collaboration among students on an exam is strictly forbidden. Violation of this policy could lead to failure on the assignment/exam, failure of the course, or other disciplinary action at the University level.

V. Academic Accommodations

Accommodations for students with disabilities will be made on an individualized basis. Students must register with Disability and Assistive Technology Center to identify and confirm appropriate accommodations. Dr. Keymer will be happy to accommodate, but must be notified of any documented accommodations during the first three weeks of the semester, so that satisfactory arrangements may be provided. Please notify Dr. Keymer immediately if circumstances arise during the semester that change your accommodation needs.

VI. Anticipated Course Schedule: (Subject to change)

Date	Lecture topic	Lab activity	Readings
9/04	Course intro	NO LAB	P&C: pp. 1-12
9/06	Hydrologic cycle		P&C: Ch. 3
9/09	Hydrologic cycle	Soil formation and texture	P&C: pp. 137-161
9/11	Watersheds		
9/13	Watersheds	Stream discharge	
9/16	Watersheds		
9/18	Surface waters		
9/20	Surface waters	Water quality	P&C: Ch. 6
9/23	Groundwater		
9/25	Groundwater		
9/27	Water Use	Groundwater principles	P&C: pp. 13-23, 339-348
9/30	Water Use		
10/02	Exam 1	Groundwater measurement	P&C: pp. 99-124
10/04	Water quality		
10/07	Water quality	Groundwater GIS	B&W: Ch. 12
10/09	Nitrogen and phosphorus		
10/11	Nitrogen and phosphorus		
10/14	Nitrogen and phosphorus	Groundwater GIS	P&C: pp. 223-234, 238-247
10/16	Streams and rivers		
10/18	Lakes	Lab quiz 1	P&C: pp. 196-214
10/21	Lakes		
10/23	Wetlands	Wastewater	P&C: Ch. 9
10/25	Soil composition		
10/28	Soil composition	Soil profile description	B&W: Ch. 1
10/30	Exam 2		
11/01	Soil formation	Soil water and heat	B&W: Ch. 2
11/04	Soil formation		
11/06	Soil classification		
11/08	Soil classification	Watershed GIS	B&W: Ch. 3
11/11	Soil physical properties		
11/13	Soil physical properties	Soil physical properties	B&W: Ch. 4
11/15	Soil water		
11/18	Soil water	Exam 3	B&W: Ch. 5-7
11/20	Exam 3		
11/22	Soil temperature		
11/25	Soil CEC	NO LAB	B&W: Ch. 8
11/27	NO CLASS		
11/29	NO CLASS		
12/02	Soil CEC	Soil cation exchange capacity	B&W: Ch. 9
12/04	Soil CEC		
12/06	Soil pH	Lab quiz 2	B&W: Ch. 9
12/09	Soil pH		
12/11	Soil biology		
12/13	Soil organic matter	Soil survey and land use	B&W: Ch. 10
12/19	Exam 4		B&W: Ch. 11

**Pennington & Cech (P&C), Brady & Weil (B&W)*